



Sheep shearers use power clippers to remove a fleece. An expert shearer can clip 200 or more sheep a day. In most parts of the world, sheep are sheared once a year.

WOOL is a fiber that comes from the fleece of sheep and some other animals. It is made into durable fabrics used in manufacturing blankets, clothing, rugs, and other items. Wool fabrics clean easily, and they resist wrinkles and hold their shape well. Wool also absorbs moisture and insulates against both cold and heat. All these features make wool popular for coats, sweaters, gloves, socks, and other clothing.

Wool fibers are nearly cylindrical in shape. Overlapping scales on the surface make the fibers mat and interlock under heat, moisture, and pressure. This property of wool fibers is called *felting*. Felting increases the strength and durability of wool fabrics. It also enables wool to be made into felt. See FIBER (picture: Wool Fibers).

The Wool Products Labeling Act of 1939 established guidelines in the United States for defining and labeling wool products. This law defines wool as the fiber from the fleece of sheep. It also includes such fibers as alpaca, from alpacas; camel's hair; cashmere, from Cashmere goats; mohair, from Angora goats; and vicuña, from vicuñas.

Worldwide production of raw wool totals about 5½ billion pounds (2.6 billion kilograms) annually. The leading wool-producing nations are Australia, Russia, New Zealand, Argentina, and South Africa, in that order. Every state in the United States except Hawaii produces some wool. Texas is the leading producer, followed by Wyoming, California, Colorado, and South Dakota, in that order. The United States uses more wool than it produces, and so it imports some wool.

Sources of Wool. Almost all wool comes from sheep. These animals—and their wool—are classified into five groups, depending on the quality of the fleece. The five classes of wool, listed here in order of quality,

are (1) fine wool, (2) crossbred wool, (3) medium wool, (4) long wool, and (5) coarse wool, or carpet wool.

Fine-Wooled Sheep include the Merino and other breeds with Merino ancestry, such as the Debouillet and the Rambouillet. These sheep produce the finest wool, which is used in making high-quality clothing.

Crossbred-Wooled Sheep, such as the Columbia and Corriedale, are crossbreeds of fine- and long-wooled breeds. Their wool is used for rugged clothing.

Leading Wool-Producing States

Wool clipped from sheep in 1977

Texas	21,000,000 lbs. (9,525,440 kg)
Wyoming	10,880,000 lbs. (4,935,090 kg)
California	9,925,000 lbs. (4,501,900 kg)
Colorado	8,809,000 lbs. (3,995,700 kg)
South Dakota	6,236,000 lbs. (2,828,600 kg)
Utah	5,453,000 lbs. (2,473,400 kg)
Idaho	5,281,000 lbs. (2,395,400 kg)
New Mexico	4,656,000 lbs. (2,111,900 kg)
Montana	4,462,000 lbs. (2,023,900 kg)
Oregon	3,401,000 lbs. (1,542,700 kg)

Source: *Wool and Mohair*, March 1978, U.S. Dept. of Agriculture.

Leading Wool-Producing Countries

Wool clipped from sheep in 1977

Australia	1,549,000,000 lbs. (702,610,000 kg)
Russia	1,010,000,000 lbs. (458,100,000 kg)
New Zealand	666,898,000 lbs. (302,499,900 kg)
Argentina	368,172,000 lbs. (167,000,000 kg)
South Africa	243,611,000 lbs. (110,500,100 kg)
Uruguay	138,009,000 lbs. (62,599,830 kg)
China	136,687,000 lbs. (62,000,180 kg)
Turkey	120,152,000 lbs. (54,500,030 kg)
United States	110,231,000 lbs. (49,999,940 kg)
Great Britain	103,397,000 lbs. (46,900,090 kg)

Source: *Production Yearbook*, 1977, FAO.

Medium-Wooled Sheep provide wool used in making industrial and upholstery fabrics. Cheviot, Dorset, Hampshire, Oxford, Shropshire, Southdown, and Suffolk sheep are in this group.

Long-Wooled Sheep include the Cotswold, Leicester, Lincoln, and Romney. They produce wool used for carpets and industrial fabrics.

Coarse-Wooled Sheep include the Karakul and Scottish Blackface. The wool of these animals is used mostly for carpets and handicraft yarns.

Types of Wool are determined by the quality of a sheep's fleece. The quality depends on the age and physical condition of the animal and by the climate in which it lives. The fleece of a healthy sheep is covered by an oily substance called *yolk*. Yolk consists of wool grease and *suint* (dried perspiration). It protects the sheep from rain and keeps the fleece from becoming matted.

Young sheep produce the best wool. The softest and finest wool, called *lamb's wool*, comes from 6- to 12-month-old sheep. *Hog wool*, also called *hogget wool*, is the first fleece sheared from a sheep that is 12 to 14 months old. After a sheep has been sheared for the first time, its wool is called *wether wool*.

Lower quality wool comes from dead or diseased sheep. Sheep that have been slaughtered for their meat provide *pulled wool*, sometimes called *skin wool* or *fine wool*. *Dead wool* is taken from sheep that have died of disease or have been killed by other animals. Aged sheep have matted and tangled fleeces that provide *cotty wool*. Fleeces soiled by manure or dirt are called *tag locks* in the United States and *stain pieces* in England and Australia.

The United States Federal Trade Commission, which administers the Wool Products Labeling Act, classifies wool into three different kinds of categories. *Virgin wool*, *new wool*, has never been spun into yarn or made

into felt. Some fabrics are made of fibers that have been reclaimed from previously spun or woven wool. *Reprocessed wool* comes from wool products that have never been used by a consumer. *Reused wool* comes from products that have been used. Reprocessed and reused wool are sometimes called *shoddy*.

Processing of Wool involves four major steps: (1) shearing, (2) sorting and grading, (3) making yarn, and (4) making fabric.

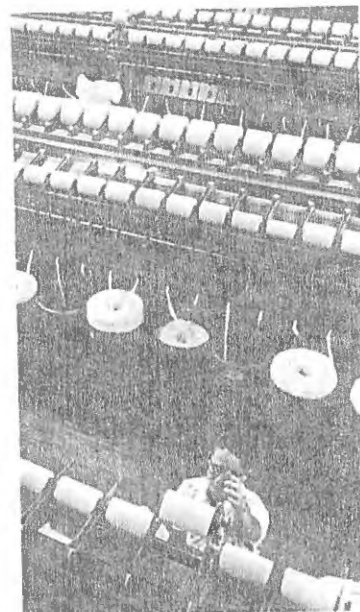
Shearing. Most sheep shearers use power shears, and experts can clip 200 or more animals a day. They remove the fleece in one piece so the various parts can be easily identified for sorting and grading. Different parts of a fleece vary in quality. For example, the best wool comes from the shoulders and sides of the sheep.

In most parts of the world, sheep are sheared once a year, in spring or early summer. But in some regions, the fleeces may be cut off twice yearly.

Sorting and Grading. Workers remove any stained, damaged, or inferior wool from each fleece and sort the rest of the wool according to the quality of the fibers. Wool fibers are judged not only on the basis of their strength, but also by their (1) *fineness* (diameter), (2) length, (3) *crimp* (waviness), and (4) color.

In the United States, the fineness of wool fibers is determined by comparing them to the fineness of Merino wool. In England, fineness depends on the number of fibers per inch. In Australia, the diameter of the fibers is generally measured in units called *microns*. A micron equals a millionth of a meter (.000039 inch).

Fiber length is important in determining what processes will be used to make yarn and fabric. *Carding length fibers*, also called *clothing length fibers*, measure less than 1½ inches (3.8 centimeters) long. *French combing length fibers* range from 1½ to 2½ inches (3.8 to 6.4 centi-



Burlington Industries, Inc.

Making Wool Yarn involves several steps. Carding machines, *left*, untangle the fibers and arrange them into a sheet called a web. The web is formed into a narrow rope called a *sliver*, *center*. The sliver is stretched into a thinner strand, and spinning machines twist it into yarn, *right*.